CLAIMS

1. (Previously Presented) A method of enhancing scan resolution, suitable for use in a scanner with an optical sensor, the optical sensor having a detecting cell that can detect a range comprising a predetermined number of two or more original pixels, the method comprising:

scanning a smooth image region that is separate from a document, wherein the smooth image region comprises at least the predetermined number of original pixels, and wherein the smooth image region comprises a generally uniform brightness;

determining a smooth brightness from the scanned smooth image region, wherein the smooth brightness corresponds to the generally uniform brightness of the smooth image region;

scanning a range of multiple original pixels, wherein one or more of the scanned original pixels correspond to a the document; and

determining a brightness of at least one of the scanned original pixels corresponding to the document based, at least in part, on the smooth brightness.

2. (Previously Presented) The method according to claim 1, wherein the smooth brightness determined prior to scanning the document.

3. (Previously Presented) The method according to claim 2, wherein the determining the brightness of at least one of the scanned original pixels corresponding to the document further comprises:

obtaining a calculated smooth brightness of the original pixels corresponding to the smooth image region; and

using a calculated brightness corresponding to the original pixels in the smooth image region as a standard to calculate the calculated brightness corresponding to original pixels of the document.

4. (Previously Presented) The method according to claim 3, further comprising:

when there are original pixels with a pre-pixel number prior to the original pixels to be calculated, ealculating the calculated brightness corresponding to the original pixels in the document;

comparing the brightness of a scanned pixel to the brightness of the original pixels with a number equal to the predetermined number minus one prior to the original pixels to be caleulated when the pre-pixel number is greater than or equal to the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated; and

eomparing the brightness of the scanned pixels to the brightness of the ealculated brightness corresponding to the original pixels prior to the original pixels to be calculated, and the smooth calculated brightness of the original pixels with the predetermined number minus the pre-pixel number and minus one when the pre-pixel is smaller than the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be ealculated.

5. (Previously Presented) The method according to claim 3, wherein the calculating the calculated brightness corresponding to the original pixels in the document comprises performing a real time calculation while scanning the document.

6. (Previously Presented) The method aecording to claim 3, wherein the calculating the calculated brightness corresponding to the original pixels in the document comprises calculating after scanning the document.

7. (Currently Amended) A method of enhancing scan resolution, suitable for use in a scanner with an optical sensor, the optical sensor having a detecting cell that can detect a range comprising a predetermined number of two or more original pixels, the method comprising:

scanning a smooth image region that is separate from a document to obtain a smooth image data, wherein the smooth image region comprises at least the predetermined number of original pixels, and wherein the smooth image region comprises a generally uniform brightness; ~~and~~

determining a smooth brightness from the smooth image data, wherein the smooth brightness corresponds to the generally uniform brightness of the smooth image region; and

determining a brightness of scanned images obtained by scanning ~~a~~ the document based, at least in part, on the smooth brightness, wherein the smooth image data is obtained after scanning the document.

8. (Previously Presented) The method according to claim 7, wherein the determining the brightness of the scanned images further comprises:

obtaining a ealculated smooth brightness of original pixels from one or more portions of the scanned images corresponding to the smooth image region; and

using the calculated smooth brightness of the original pixels as a standard to calculate the brightness corresponding to scanned images of the document.

9. (Previously Presented) The method according to claim 8, further comprising:

when there are original pixels with a pre-pixel number prior to the original pixels to be calculated, calculating the calculated brightness corresponding to the original pixels in the document;

comparing the brightness of a scanned pixel to the brightness of the original pixels with a number equal to the predetermined number minus one prior to the original pixels to be calculated when the pre-pixel number is greater than or equal to the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated; and

comparing the brightness of the scanned pixels to the brightness of the calculated brightness corresponding to the original pixels prior to the original pixels to be calculated, and the smooth calculated brightness of the original pixels with the predetermined number minus the pre-pixel number and minus one when the pre-pixel is smaller than the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated.

10. (Previously Presented) A method of enhancing scan resolution, suitable for use in a scanner with an optical sensor, the optical sensor having a detecting cell that can detect a range eomprising a predetermined number of two or more original pixels, the method comprising:

scanning a smooth image region to obtain a smooth image data, wherein the smooth image region comprises at least the predetermined number of original pixels and a generally uniform brightness; and

processing scanned images obtained by scanning a document according to the smooth image data, wherein processing the scanned images comprises:

obtaining a calculated smooth brightness of the original pixels corresponding to scanned pixels of the smooth image data; and

using the calculated smooth brightness corresponding to the original pixels with the predetermined number minus one in the smooth image region as a standard to calculate a calculated brightness corresponding to original pixels of the document.

11. (Previously Presented) The method according to claim 10, wherein the smooth image data is obtained prior to scanning the document.

12. (Previously Presented) The method according to claim 10, wherein when there are original pixels with a pre-pixel number prior to the original pixels to be calculated, calculating the calculated brightness corresponding to the original pixels in the document, wherein the calculating comprises:

comparing the brightness of a scanned pixel to the brightness of the original pixels with a number equal to the predetermined number minus one prior to the original pixels to be calculated when the pre-pixel number is greater than or equal to the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated; and

comparing the brightness of the scanned pixels to the brightness of the calculated brightness corresponding to the original pixels prior to the original pixels to be calculated, and the smooth calculated brightness of the original pixels with the

predetermined number minus the pre-pixel number and minus one when the pre-pixel is smaller than the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated.

13. (Previously Presented) The method according to claim 10, wherein the calculating the calculated brightness eorresponding to the original pixels in the document comprises performing a real time calculation while scanning the document.

14. (Previously Presented) The method according to claim 10, wherein the calculating the calculated brightness corresponding to the original pixels in the document comprises calculating after scanning the document.

15. (Previously Presented) The method according to claim 10, wherein the smooth image data is obtained after scanning the document.

16. (Previously Presented) A method, comprising:

scanning a smooth image region separate from another image region, the smooth image region having a generally uniform brightness;

obtaining a standard brightness from the smooth image region, wherein the standard brightness corresponds to the generally uniform brightness of the smooth image region; and

scanning a predetermined number of multiple original pixels, wherein one or more of the scanned original pixels correspond to the other image region; and

determining a calculated brightness for at least one of the scanned original pixels corresponding to the other image region based at least in part on the standard brightness.

17. (Previously Presented) The method according to claim 16, wherein the other image region comprises at least a portion with a non-uniform brightness.

18. (Previously Presented) The method according to claim 16, wherein the scanning of the smooth image region with the generally uniform brightness is performed prior to scanning the other image region.

19. (Previously Presented) The method according to claim 16, wherein the scanning of the smooth image region with the generally uniform brightness is performed after scanning the other image region.

20. (Previously Presented) A storage medium, comprising one or more instructions thereon that, if executed, result in:

enhancing sean resolution in a scanner with an optical sensor having a detecting cell that ean detect a range including a predetermined number of two or more original pixels, wherein enhancing scan resolution comprises:

scanning a smooth image region to obtain a smooth image data, wherein the smooth image region comprises at least the predetermined number of original pixels and a generally uniform brightness; and

processing scanned images obtained by scanning a document according to the smooth image data, wherein processing the scanned images comprises:

obtaining a calculated smooth brightness of the original pixels eorresponding scanned pixels of the smooth image data; and

using a calculated smooth brightness corresponding to the original pixels with the predetermined number minus one in the smooth image region as a standard to calculate a calculated brightness corresponding to original pixels of the document.

21. (Previously Presented) The storage mcdium of claim 20, wherein the smooth image data is obtained prior to scanning the document.

22. (Previously Presented) The storage medium of claim 20, wherein when there are original pixels with a pre-pixel number prior to the original pixels to be calculated, the instructions, if executed, further result in calculating the calculated

brightness corresponding to the original pixels in the document, wherein the calculating comprises:

comparing the brightness of a scanned pixel to the brightness of the original pixels with a number equal to the predetermined number minus one prior to the original pixels to be caleulated when the pre-pixel number is greater than or equal to the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated; and

comparing the brightness of the scanned pixels to the brightness of the calculated brightness corresponding to the original pixels prior to the original pixels to be calculated, and the smooth caleulated brightness of the original pixels with the predetermined number minus the pre-pixel number and minus one when the pre-pixel is smaller than the predetermined number minus one, so as to obtain the calculated brightness of the original pixels to be calculated.

23. (Previously Presented) The storage medium of claim 20, wherein the calculating the calculated brightness corresponding to the original pixels in the doeument comprises performing a real time calculation while scanning the document.

24. (Previously Presented) The storage medium of claim 20, wherein the calculating the calculated brightness corresponding to the original pixels in the document comprises calculating after scanning the document.

25. (Previously Presented) The storage medium of claim 20, wherein the smooth image data is obtained after scanning the document.

26. (Previously Presented) A computer-readable storage medium, comprising one or more instructions thereon that, if executed, result in:

scanning a smooth image region that is separate from another image region, the smooth image region having a generally uniform brightness;

obtaining a standard brightness from the smooth image region, wherein the standard brightness corresponds to the generally uniform brightness of the smooth image region; and

scanning a predetermined number of multiple original pixels, wherein one or more of the scanned original pixels correspond to the other image region; and

determining a calculated brightness for at least one of the scanned original pixels corresponding to the other image region based at least in part on the standard brightness.

27. (Previously Presented) The computer-readable storage medium of claim 26, wherein the other image region comprises at least a portion with a non-uniform brightness.

28. (Previously Presented) The computer-readable storage medium of claim 26, wherein the scanning of the smooth image region with the generally uniform brightness is performed prior to scanning the other image region.

29. (Previously Presented) The computer-readable storage medium of claim 26, wherein the scanning of the smooth image region with the generally uniform brightness is performed after scanning the other image region.

30. – 35. (Cancelled)

36. (Previously Presented) An apparatus, comprising:

means for scanning a smooth image region that is separate from another image region, the smooth image region having a generally uniform brightness;

means for obtaining a standard brightness from the smooth image region, wherein the standard brightness corresponds to the generally uniform brightness of the smooth image region;

means for scanning a predetermined number of multiple original pixels, wherein one or more of the scanned original pixels correspond to the other image region; and

means for determining a ealculated brightness for at least one of the scanned original pixels corresponding to the other image region based at least in part on the standard brightness.

37. (Previously Presented) The apparatus of elaim 36, wherein the means for determining the ealeulated brightness for at least a portion of the other image region based at least in part on the standard brightness comprise means for determining the calculated brightness for at least a portion of the other image region having a non-uniform brightness.

38. (Previously Presented) The apparatus of claim 36, wherein the means for scanning of the smooth image region with the generally uniform brightness comprise means for scanning of the smooth image region with a uniform brightness prior to scanning the other image region.

39. (Previously Presented) The apparatus of claim 36, wherein the means for scanning of the smooth image region with the generally uniform brightness comprise means for scanning of the smooth image region with a uniform brightness after scanning the other image region.

40. (Previously Presented) A system, comprising:

a sensor capable of scanning a smooth image region with a generally uniform brightness separately from scanning a range of multiple original pixels, wherein one or more of the scanned original pixels correspond to another image region; and

a scanner capable of obtaining a standard brightness from the smooth image region, wherein the standard brightness corresponds to the generally uniform brightness of the smooth image region, and wherein the scanner is capable of determining a caleulated brightness for at least one of the scanned original pixels corresponding to the other image region based at least in part on the standard brightness.

41. (Previously Presented) The system of claim 40, wherein the scanner is capable of determining the calculated brightness for at least a portion of the other image region having a non-uniform brightness.